

Cryocooler With Cold Compressor for Deep Space Applications, Phase II

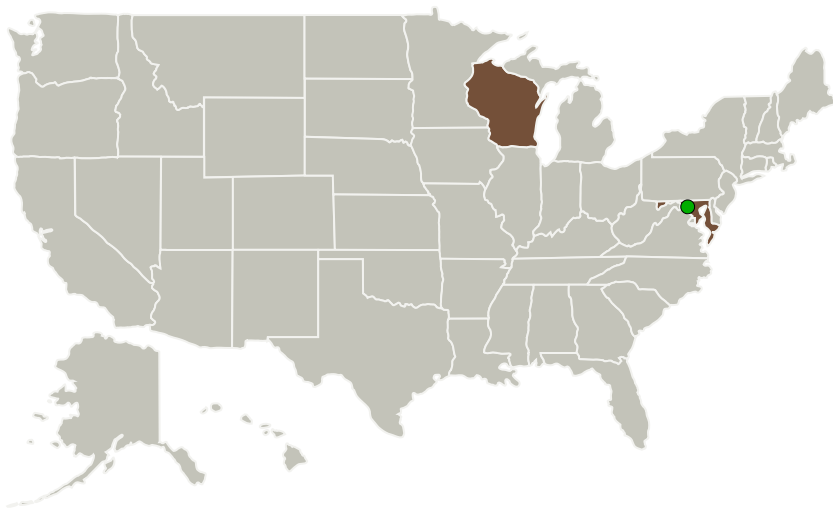
Completed Technology Project (2014 - 2016)



Project Introduction

The innovation is a high-frequency single-stage pulse tube cryocooler (PTC) that operates at a heat rejection temperature of 150 K. It employs a flexure-bearing cold compressor operating at that same heat rejection temperature. High frequency, low temperature pulse-tube cryocoolers are a promising technology for future NASA missions. Such missions will require cryocoolers providing cooling capacities in excess of 0.3 W at 35 K with heat rejection capability to temperature sinks as low as 150 K at input powers up to 20 W. Presently there are no cooling systems operating at this heat rejection temperature.

Primary U.S. Work Locations and Key Partners



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

Organizations Performing Work	Role	Type	Location
Madison CryoGroup, LLC	Lead Organization	Industry	Middleton, Wisconsin
 Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

Maryland	Wisconsin
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Project Transitions



April 2014: Project Start



July 2016: Closed out

Closeout Summary: Cryocooler With Cold Compressor for Deep Space Applications, Phase II Project Image

Closeout Documentation:

- Final Summary Chart Image(<https://techport.nasa.gov/file/137640>)

Images



Briefing Chart Image

Cryocooler With Cold Compressor for Deep Space Applications, Phase II

(<https://techport.nasa.gov/image/133636>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Madison CryoGroup, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

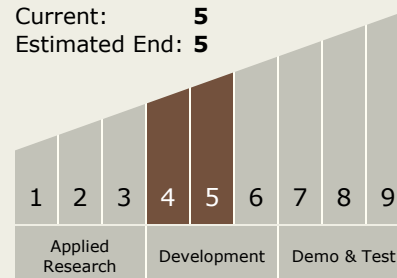
James Maddocks

Technology Maturity (TRL)

Start: 4

Current: 5

Estimated End: 5



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.6 Cryogenic / Thermal

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System